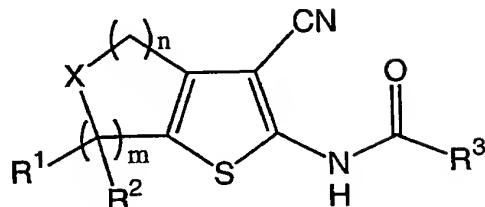


WHAT IS CLAIMED IS:

1. A compound represented by formula I:



5 or a pharmaceutically acceptable salt or solvate thereof wherein:

X is NR^4 or CR^5R^6 ;

10 R^1 is selected from the group consisting of: H, C₁₋₁₀alkyl, C₃₋₇cycloalkyl and Aryl, said alkyl, cycloalkyl and Aryl being optionally substituted with 1-4 substituents independently selected from R^{13} ;

15 R^2 is selected from the group consisting of: R^1 as defined above, $-C(O)_2R^7$ and $-CONR^7R^8$;

m and n are selected from 0, 1, 2 and 3, such that the sum of m and n is 2 or 3, and when m is greater than 1, no more than one R^1 and no more than one R^2 can be other than H;

20 R^3 is selected from the group consisting of: C₁₋₁₀alkyl, C₃₋₇cycloalkyl and Aryl, said alkyl, cycloalkyl and Aryl being optionally substituted with 1-4 substituents selected from R^{13} , such that when R^3 represents C₁₋₁₀alkyl substituted with one R^{13} group, and R^{13} represents halo, R^1 , R^2 , R^5 and R^6 do not represent C₁₋₃alkyl;

25 R^4 is selected from the group consisting of: C₃₋₁₀ alkyl, C₃₋₇ cycloalkyl, Aryl, HAR, Hetcy, C(O)C₅₋₁₀ alkyl, C(O)C₃₋₇ cycloalkyl, C(O)-Aryl, C(O)-HAR, C(O)-Hetcy, CONR⁹R¹⁰, CO₂R⁹ and SO₂R⁹, the alkyl, cycloalkyl, Aryl, HAR and Hetcy groups and portions being optionally substituted with 1-4 substituents selected from R^{13} ;

one of R^5 and R^6 is selected from the group consisting of $NR^{11}R^{12}$, $NR^{11}COR^{12}$,

NR¹¹CO₂R¹² and NR¹¹S(O)₂R¹², and the other represents R¹, HAR, Hetcy or OR¹¹, said HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹³,

5 R⁷, R¹⁰ and R¹¹ are selected from the group consisting of: R¹ as defined above, HAR and Hetcy, said HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹³;

10 R⁸, R⁹ and R¹² are selected from the group consisting of: C₁₋₁₀alkyl, C₃₋₇cycloalkyl, Aryl, HAR and Hetcy, said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹³,

15 or alternatively, R⁷, R⁸, R⁹ and R¹⁰ are as defined above, and R¹¹ and R¹² are taken together with the atoms to which they are attached along with any intervening atoms and represent a 5-8 membered ring optionally containing 1-2 heteroatoms selected from O, S and N, and optionally substituted with 1-4 substituents selected from R¹³;

20 15 each R¹³ is selected from the group consisting of: halo, NR¹⁴R¹⁵, C₁₋₄alkyl, C₃₋₇cycloalkyl, Aryl, HAR, Hetcy, CF₃, OCF₃, OR¹⁵, NO₂, S(O)_xR¹⁴, SR¹⁴, S(O)_xNR¹⁴R¹⁵, O(CR¹⁶R¹⁷)_yNR¹⁴R¹⁵, C(O)R¹⁴, CO₂R¹⁵, CO₂(CR¹⁶R¹⁷)_yCONR¹⁴R¹⁵, OC(O)R¹⁴, CN, C(O)NR¹⁴R¹⁵, NR¹⁵C(O)R¹⁴, NR¹⁵C(O)OR¹⁴, NR¹⁵C(O)NR¹⁶R¹⁴ and CR¹⁵(N-OR¹⁴), wherein x is 1 or 2, and y is an integer from 1-4, said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹⁸;

25 20 R¹⁴, R¹⁵, R¹⁶ and R¹⁷ are independently selected from the group consisting of: H, C₁₋₁₀alkyl, C₃₋₇cycloalkyl, Aryl and Ar-C₁₋₁₀alkyl;

30 25 and each R¹⁸ is independently selected from the group consisting of: halogen, CN, C₁₋₄alkyl, OH, CF₃, Aryl, Aryloxy, CO₂H and CO₂C₁₋₄alkyl, said Aryl and the Aryl portion of Aryloxy being optionally substituted with up to 4 halo groups, and up to 2 C₁₋₄alkyl, OH, CF₃ or CN groups.

35 30 2. A compound in accordance with claim 1 wherein R¹ is selected from the group consisting of: H, C₁₋₁₀alkyl, C₃₋₆cycloalkyl and phenyl, said alkyl and phenyl being optionally substituted with 1-3 substituents selected from R¹³.

3. A compound in accordance with claim 1 wherein R² is H.

4. A compound in accordance with claim 1 wherein m is 0 and n is 2 or 3, or m is 1
5 and n is 1 or 2, such that the sum of m and n is 2 or 3.

5. A compound in accordance with claim 1 wherein R³ is C₃₋₁₀ alkyl optionally substituted with 1-4 substituents selected from R¹³, such that when R³ is substituted with one R¹³ group, and R¹³ represents halo, R¹, R², R⁵ and R⁶ do not represent C₁₋₃alkyl.

10

6. A compound in accordance with claim 5 wherein R³ represents C₃₋₅ alkyl, optionally substituted with 1-4 R¹³ groups.

7. A compound in accordance with claim 1 wherein R⁴ is selected from the group consisting of: C₅₋₁₀ alkyl, C₃₋₆ cycloalkyl, phenyl, HAR, Hetcy, C(O)C₅₋₁₀alkyl, C(O)C₃₋₆ cycloalkyl and CO₂R⁹, the alkyl, cycloalkyl and, Aryl groups and portions, phenyl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹³, and R⁹ representing C₁₋₁₀alkyl, C₃₋₇cycloalkyl, Aryl, HAR or Hetcy, said alkyl, cycloalkyl, Aryl groups and portions, HAR and Hetcy being optionally substituted with 1-4 R¹³ groups.

20

8. A compound in accordance with claim 1 wherein X represents CR⁵R⁶, R⁵ is NR¹¹R¹², and R⁶ is selected from the group consisting of: R¹, HAR, Hetcy and OR¹¹; wherein R¹ is as originally defined, R¹¹ is R¹ or HAR, and R¹² is C₁₋₆ alkyl, Aryl or HAR, said Aryl and HAR being optionally substituted with 1-4 R¹³ groups,

25 or R¹¹ and R¹² are taken in combination with the atom to which they are attached and represent a 5-6 membered ring optionally substituted with 1-2 R¹³ groups.

30

9. A compound in accordance with claim 1 wherein R¹³ is selected from the group consisting of: halo, C₁₋₄alkyl, C₃₋₇cycloalkyl, Aryl, HAR, Hetcy, and OR¹⁵ wherein R¹⁵ is H, said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹⁸ and
R¹⁸ is halo, C₁₋₄alkyl, Aryl or CO₂C₁₋₄ alkyl.

35

10. A compound in accordance with claim 1 wherein:
R¹ is selected from the group consisting of: H, C₁₋₁₀alkyl, C₃₋₆ cycloalkyl and

phenyl, said alkyl and phenyl being optionally substituted with 1-3 substituents selected from R¹³;

R² is H;

m is 0 and n is 2 or 3, or m is 1 and n is 1 or 2, such that the sum of m and n is 2

5 or 3;

R³ is C₃₋₁₀ alkyl optionally substituted with 1-4 substituents selected from R¹³, such that when R³ is substituted with one R¹³ group, and R¹³ represents halo, R¹, R², R⁵ and R⁶ do not represent C₁₋₃alkyl;

10 R⁴ is selected from the group consisting of: C₅₋₁₀ alkyl, C₃₋₆ cycloalkyl, phenyl, HAR, Hetcy, C(O)C₅₋₁₀alkyl, C(O)C₃₋₆ cycloalkyl and CO₂R⁹, the alkyl, cycloalkyl and, Aryl groups and portions, phenyl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹³, and R⁹ representing C₁₋₁₀alkyl, C₃₋₇cycloalkyl, Aryl, HAR or Hetcy, said alkyl, cycloalkyl, Aryl groups and portions, HAR and Hetcy being optionally substituted with 1-4 R¹³ groups;

15 X represents CR⁵R⁶, R⁵ is NR¹¹R¹², and R⁶ is selected from the group consisting of: R¹, HAR, Hetcy and OR¹¹, wherein R¹ is as originally defined, R¹¹ is R¹ or HAR, and R¹² is C₁₋₆alkyl, Aryl or HAR, said Aryl and HAR being optionally substituted with 1-4 R¹³ groups, or R¹¹ and R¹² are taken in combination with the atom to which they are attached and represent a 5-6 membered ring optionally substituted with 1-2 R¹³ groups;

20 R¹³ is selected from the group consisting of: halo, C₁₋₄alkyl, C₃₋₇cycloalkyl, Aryl, HAR, Hetcy, and OR¹⁵ wherein R¹⁵ is H, said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R¹⁸ and

R¹⁸ is halo, C₁₋₄alkyl, Aryl or CO₂C₁₋₄ alkyl.

25

11. A compound in accordance with claim 1 selected from the group consisting of:
tert-butyl 3-cyano-2-[(2-ethylbutanoyl)amino]-5,6-dihydrothieno[2,3-b]pyridine-7(4H)-carboxylate;
N-(3-cyano-7-isobutyl-4,5,6,7-tetrahydrothieno[2,3-b]pyridin-2-yl)-2-ethylbutanamide;
30 N-(3-cyano-7-isopropyl-4,5,6,7-tetrahydrothieno[2,3-b]pyridin-2-yl)-2-ethylbutanamide;
N-[6-[(4'-chloro-1,1'-biphenyl-4-yl)methyl]-3-cyano-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl]-2-ethylbutanamide;
N-[3-cyano-6-(4-phenoxybenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl]-2-ethylbutanamide;

N-{6-[4-(4-chlorophenoxy)benzyl]-3-cyano-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl}-2-ethylbutanamide;

N-[3-cyano-6-(3-phenoxybenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl]-2-ethylbutanamide;

5 N-(3-cyano-6-[(1-(2,4-dichlorophenyl)cyclopropyl)carbonyl]-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl)-2-ethylbutanamide;

N-{3-cyano-6-[(2,4-dichlorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide;

N-{3-cyano-6-[(cyclopropylmethyl)(2,4-dichlorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-10 2-yl}-2-ethylbutanamide;

N-(3-cyano-6-[(2,4-dichlorobenzyl)(isopropyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;

N-(3-cyano-6-[(2,4-dichlorobenzyl)(isopentyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;

15 N-(3-cyano-6-[(2,4-dichlorobenzyl)(3,3-dimethylbutyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;

N-[3-cyano-6-[(2,4-dichlorobenzyl)(isobutyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;

N-[3-cyano-6-[(2,4-dichlorobenzyl)(2-ethylbutyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;

20 20 N-(3-cyano-6-[(2,4-dichlorobenzyl)[(4,5-dimethyl-2-furyl)methyl]amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;

N-[3-cyano-6-[(2,4-dichlorobenzyl)(3-phenylpropyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;

25 N-{6-[(1-benzofuran-2-ylmethyl)(2,4-dichlorobenzyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide;

N-[3-cyano-6-[(2,4-dichlorobenzyl)(3,3,3-trifluoropropyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;

N-[3-cyano-6-[(2,4-dichlorobenzyl)(4-fluorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;

30 N-[3-cyano-6-[(2,4-dichlorobenzyl)(tetrahydrofuran-2-ylmethyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;

N-(3-cyano-6-[(2,4-dichlorobenzyl)[(5-methyl-2-furyl)methyl]amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;

tert-butyl (2S)-2-{{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}(2,4-dichlorobenzyl)amino]methyl}pyrrolidine-1-carboxylate;
N-{3-cyano-6-[(3,4-dichlorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide;
5 N-{3-cyano-6-[(3,4-dichlorobenzyl)(methyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide;
N-(3-cyano-6-[(2-phenyl-1,3-thiazol-5-yl)methyl]amino)-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;
N-(3-cyano-6-{methyl[(2-phenyl-1,3-thiazol-5-yl)methyl]amino}-4,5,6,7-tetrahydro-1-
10 benzothien-2-yl)-2-ethylbutanamide;
N-(3-cyano-6-[(2-phenyl-1,3-thiazol-4-yl)methyl]amino)-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;
N-(3-cyano-6-{methyl[(2-phenyl-1,3-thiazol-4-yl)methyl]amino}-4,5,6,7-tetrahydro-1-
benzothien-2-yl)-2-ethylbutanamide;
15 N-[3-cyano-6-(1,2,3,4-tetrahydronaphthalen-1-ylamino)-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
N-{3-cyano-6-[methyl(1,2,3,4-tetrahydronaphthalen-1-yl)amino]-4,5,6,7-tetrahydro-1-
benzothien-2-yl}-2-ethylbutanamide;
N-{3-cyano-6-[(2,3-dihydro-1H-inden-1-ylmethyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl}-
20 2-ethylbutanamide;
N-{3-cyano-6-[(2,3-dihydro-1H-inden-1-ylmethyl)(methyl)amino]-4,5,6,7-tetrahydro-1-
benzothien-2-yl}-2-ethylbutanamide;
N-{6-[(2-chlorobenzyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide
N-{6-[(2-chlorobenzyl)(methyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-
25 ethylbutanamide;
N-(6-{[1-(4-bromophenyl)ethyl]amino}-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-
ethylbutanamide;
N-{6-[[1-(4-bromophenyl)ethyl](methyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl}-
2-ethylbutanamide;
30 N-[3-cyano-6-(3-phenylpyrrolidin-1-yl)-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-
ethylbutanamide;
N-[3-cyano-6-(4-phenylpiperazin-1-yl)-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-(2,4-
dichlorobenzyl)-3,3-dimethylbutanamide;

N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]cyclopropanecarboxamide;
N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]-3,3-dimethylbutanamide;
5 N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]cyclopentanecarboxamide;
N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]benzamide and
10 N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]cyclohexanecarboxamide.

12. A pharmaceutical composition which is comprised of a compound in accordance with claim 1 in combination with a pharmaceutically acceptable carrier.

15 13. A method of treating type 2 diabetes mellitus in a mammalian patient in need of such treatment, comprising administering to said patient a compound in accordance with claim 1 in an amount that is effective to treat type 2 diabetes mellitus.

20 14. A method of preventing or delaying the onset of type 2 diabetes mellitus in a mammalian patient in need thereof, comprising administering to said patient a compound in accordance with claim 1 in an amount that is effective to prevent or delay the onset of type 2 diabetes mellitus.

25 15. A method of treating, preventing or delaying the onset of a disease or condition in a type 2 diabetes mellitus patient, said disease or condition being selected from the group consisting of: dyslipidemia selected from elevated serum cholesterol, elevated serum triglycerides, elevated serum low density lipoproteins and low levels of serum high density lipoprotein, microvascular or macrovascular changes and the sequellae of such conditions selected from coronary heart disease, stroke, peripheral vascular disease, hypertension, renal hypertension, nephropathy, neuropathy and retinopathy, said method comprising administering to 30 the type 2 diabetic patient an amount of a compound of formula I that is effective for treating, preventing or delaying the onset of such diseases or conditions.